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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2009-1039; Directorate Identifier 2009-CE-059-AD; Amendment 39-16085; AD 2009-23-11]**

**RIN 2120-AA64**

**Airworthiness Directives; Empresa Brasileira de Aeronautica S.A. (EMBRAER) Model EMB-500 Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule; request for comments.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for the products listed above. This AD results from mandatory continuing airworthiness information (MCAI) issued by the aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as:

It has been found the possibility of heating deactivation of Air Data System (ADS) sensors due to its inadequate automatic logic, when ADS/AOA knob is on AUTO position associated with the following messages:

- DC BUS 1 OFF displayed on Crew Alerting System-CAS in conjunction with STBY HTR FAIL (which means loss of power on DC BUS 1); or
- EMER BUS OFF displayed on CAS (which means loss of power on EMERGENCY BUS); or
- ELEC EMERGENCY displayed on CAS (which means Electrical Emergency).

The loss of airplane air data sensors heating may cause ice buildup on their surfaces, which in turn may cause wrong pressure acquisitions resulting in erroneous flight parameters indication to the flight crew. Since this condition may occur in other airplanes of the same type and affects flight safety, an immediate corrective action is required. Thus, sufficient reason exists to request compliance with this AD in the indicated time limit.

This AD requires actions that are intended to address the unsafe condition described in the MCAI.

**DATES:** This AD becomes effective December 2, 2009.

We must receive comments on this AD by December 28, 2009.

**ADDRESSES:** You may send comments by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590.
- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (telephone (800) 647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Karl Schletzbaum, Aerospace Engineer, FAA, Small Airplane Directorate, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329-4146; fax: (816) 329-4090.

### **SUPPLEMENTARY INFORMATION:**

#### **Discussion**

The AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL–BRAZIL, which is the aviation authority for Brazil, has issued AD No.: 2009-10-01R1, dated October 16, 2009 (referred to after this as “the MCAI”), to correct an unsafe condition for the specified products. The MCAI states:

It has been found the possibility of heating deactivation of Air Data System (ADS) sensors due to its inadequate automatic logic, when ADS/AOA knob is on AUTO position associated with the following messages:

- DC BUS 1 OFF displayed on Crew Alerting System–CAS in conjunction with STBY HTR FAIL (which means loss of power on DC BUS 1); or
- EMER BUS OFF displayed on CAS (which means loss of power on EMERGENCY BUS); or
- ELEC EMERGENCY displayed on CAS (which means Electrical Emergency).

The loss of airplane air data sensors heating may cause ice buildup on their surfaces, which in turn may cause wrong pressure acquisitions resulting in erroneous flight parameters indication to the flight crew. Since this condition may occur in other airplanes of the same type and affects flight safety, an immediate corrective action is required. Thus, sufficient reason exists to request compliance with this AD in the indicated time limit.

This AD action requires inserting information into the Abnormal Procedures section of the FAA-approved airplane flight manual (AFM). You may obtain further information by examining the MCAI in the AD docket.

## **FAA's Determination and Requirements of the AD**

This product has been approved by the aviation authority of another country, and is approved for operation in the United States. Pursuant to our bilateral agreement with this State of Design Authority, they have notified us of the unsafe condition described in the MCAI and service information referenced above. We are issuing this AD because we evaluated all information provided by the State of Design Authority and determined the unsafe condition exists and is likely to exist or develop on other products of the same type design.

## **Differences Between This AD and the MCAI or Service Information**

We have reviewed the MCAI and related service information and, in general, agree with their substance. But we might have found it necessary to use different words from those in the MCAI to ensure the AD is clear for U.S. operators and is enforceable. In making these changes, we do not intend to differ substantively from the information provided in the MCAI and related service information.

We might have also required different actions in this AD from those in the MCAI in order to follow FAA policies. Any such differences are described in a separate paragraph of the AD. These requirements take precedence over those copied from the MCAI.

## **FAA's Determination of the Effective Date**

An unsafe condition exists that requires the immediate adoption of this AD. The FAA has found that the risk to the flying public justifies waiving notice and comment prior to adoption of this rule because the loss of airplane air data sensors heating may cause ice buildup on their surface. This condition may cause wrong pressure acquisitions, resulting in erroneous flight parameters indication to the flight crew. Therefore, we determined that notice and opportunity for public comment before issuing this AD are impracticable and that good cause exists for making this amendment effective in fewer than 30 days.

## **Comments Invited**

This AD is a final rule that involves requirements affecting flight safety, and we did not precede it by notice and opportunity for public comment. We invite you to send any written relevant data, views, or arguments about this AD. Send your comments to an address listed under the ADDRESSES section. Include "Docket No. FAA-2009-1039; Directorate Identifier 2009-CE-059-AD" at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this AD. We will consider all comments received by the closing date and may amend this AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this AD.

## **Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. "Subtitle VII: Aviation Programs," describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in "Subtitle VII, Part A, Subpart III, Section 44701: General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This

regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

We determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866;
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Safety.

### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

#### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new AD:



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**2009-23-11 Empresa Brasileira de Aeronautica S.A. (EMBRAER):** Amendment 39-16085;  
Docket No. FAA-2009-1039; Directorate Identifier 2009-CE-059-AD.

**Effective Date**

(a) This airworthiness directive (AD) becomes effective December 2, 2009.

**Affected ADs**

(b) None.

**Applicability**

(c) This AD applies to Model EMB-500 airplanes, all serial numbers, certificated in any category.

**Subject**

(d) Air Transport Association of America (ATA) Code 30: Ice and Rain Protection.

**Reason**

(e) The mandatory continuing airworthiness information (MCAI) states:

“It has been found the possibility of heating deactivation of Air Data System (ADS) sensors due to its inadequate automatic logic, when ADS/AOA knob is on AUTO position associated with the following messages:

- DC BUS 1 OFF displayed on Crew Alerting System–CAS in conjunction with STBY HTR FAIL (which means loss of power on DC BUS 1); or
- EMER BUS OFF displayed on CAS (which means loss of power on EMERGENCY BUS); or
- ELEC EMERGENCY displayed on CAS (which means Electrical Emergency).

The loss of airplane air data sensors heating may cause ice buildup on their surfaces, which in turn may cause wrong pressure acquisitions resulting in erroneous flight parameters indication to the flight crew. Since this condition may occur in other airplanes of the same type and affects flight safety, an immediate corrective action is required. Thus, sufficient reason exists to request compliance with this AD in the indicated time limit."

This AD action requires inserting information into the Abnormal Procedures section of the FAA-approved airplane flight manual (AFM).

## Actions and Compliance

(f) Unless already done, before further flight, incorporate into the AFM the following procedures section revisions. You may insert a copy of this AD into the appropriate sections of the AFM to comply with the requirements of this AD.

(1) Revise the AFM by replacing the ELECTRICAL EMERGENCY procedures in AFM section 4-08, Abnormal Procedures, pages 3 and 4, with Figure 1:

<b>ELECTRICAL EMERGENCY</b>											
Reset both generators.											
If message persists:											
LAND AS SOON AS POSSIBLE.											
ADS/AOA Knob.....	ON										
Exit and avoid icing conditions.											
Confirm that IESI has reverted. If not, select ADSTBY on PFD.											
PRESSURIZATION MODE Selector....	MAN										
CABIN ALT Switch.....	AS REQUIRED										
Airspeed.....	250 KIAS MAXIMUM										
Altitude.....	25000 ft MAXIMUM										
<b>CAUTION:</b> BATTERIES DURATION IS 45 MINUTES MAXIMUM.											
When landing maintain airspeed according to the following:											
<table border="1"> <thead> <tr> <th>FLAPS POSITION</th> <th>MINIMUM AIRSPEED</th> </tr> </thead> <tbody> <tr> <td>0</td> <td><math>V_{REF FULL} + 30</math> KIAS</td> </tr> <tr> <td>1</td> <td><math>V_{REF FULL} + 15</math> KIAS</td> </tr> <tr> <td>2</td> <td><math>V_{REF FULL} + 5</math> KIAS</td> </tr> <tr> <td>3 and FULL</td> <td><math>V_{REF FULL}</math></td> </tr> </tbody> </table>		FLAPS POSITION	MINIMUM AIRSPEED	0	$V_{REF FULL} + 30$ KIAS	1	$V_{REF FULL} + 15$ KIAS	2	$V_{REF FULL} + 5$ KIAS	3 and FULL	$V_{REF FULL}$
FLAPS POSITION	MINIMUM AIRSPEED										
0	$V_{REF FULL} + 30$ KIAS										
1	$V_{REF FULL} + 15$ KIAS										
2	$V_{REF FULL} + 5$ KIAS										
3 and FULL	$V_{REF FULL}$										
<b>NOTE:</b> - If flaps stop between two positions, use the minimum airspeed associated to the next retracted position and the $V_{FE}$ associated to the next extended position. - Disregard green circle indication, as it may indicate slower speeds.											
During landing run:											
Emergency/Parking Brake.....	APPLY										
<b>CAUTION:</b> WHEN APPLYING EMERGENCY BRAKES, PULL THE HANDLE PROGRESSIVELY, MONITORING THE EMERGENCY/PARKING BRAKE LIGHT.											
<b>NOTE:</b> The emergency/parking brake accumulator allows 6 actuations.											
(Continues on the next page)											

(Continued from the previous page)

**CAUTION:** TO DETERMINE THE MINIMUM SUITABLE LANDING DISTANCE, MULTIPLY THE UNFACTORED LANDING DISTANCE FOR FLAPS FULL BY ONE OF THE FACTORS BELOW:

FLAPS POSITION	CORRECTION FACTOR
0	2.25
1	1.75
2	1.65
3 and FULL	1.50

If a go-around is required, maintain the minimum airspeed presented in the applicable flaps configuration from the table above, until the acceleration altitude is reached.

The list below presents the relevant inoperative equipment. Items marked with an asterisk have dedicated failure procedures, which may have to be performed, at pilot's discretion:

- ADC 1 and 2 (\*)
- AHRS 2 (\*)
- Air Conditioning
- Anti-Ice/De-Ice Systems
- Audio Panel 2 (\*)
- Autopilot (\*)
- DMEs
- Flap System (\*)
- FMS Panel
- GIA 2 (\*)
- GPS 2/VOR 2/ILS 2
- Landing/Taxi Lights
- Main Brake (\*)
- PFD 2
- Pitch Trim (Main) (\*)
- Pressurization Auto (\*)
- Roll Trim
- Stick Pusher (\*)
- TCAS
- Transponder 2
- VHF 2
- Windshield Heater (\*)
- WX Radar
- Yaw Damper
- Yaw Trim

Figure 1 – AFM Section 4-08, pages 3 and 4, ELECTRICAL EMERGENCY

(2) Revise the AFM by replacing the DC BUS 1 OFF procedure in AFM section 4-08, Abnormal Procedures, pages 6 and 7, with Figure 2:

## DC BUS 1 OFF

ADS/AOA Knob..... ON  
 Icing Conditions..... EXIT/AVOID

For landing procedures:

- Maintain airspeed according to the following:

FLAPS POSITION	MINIMUM AIRSPEED	
	NO ICING	IN ICING/WITH ICE
0	$V_{REF FULL} + 25$ KIAS	$V_{REF FULL} + 40$ KIAS
1	$V_{REF FULL} + 15$ KIAS	$V_{REF FULL} + 35$ KIAS
2	$V_{REF FULL} + 5$ KIAS	$V_{REF FULL} + 30$ KIAS
3 and FULL	$V_{REF FULL}$	$V_{REF FULL} + 25$ KIAS

**NOTE:** - If flaps stop between two positions, use the minimum airspeed associated to the next retracted position and  $V_{FE}$  associated to the next extended position.  
 - Disregard green circle indication, as it may indicate slower speeds.

**CAUTION:** TO DETERMINE THE MINIMUM SUITABLE LANDING DISTANCE, MULTIPLY THE UNFACTORED LANDING DISTANCE FOR FLAPS FULL BY ONE OF THE FACTORS BELOW:

FLAPS POSITION	CORRECTION FACTOR	
	NO ICING	IN ICING/WITH ICE
0	1.40	1.70
1	1.20	1.60
2	1.10	2.00
3 and FULL	1.00	1.95

The list below presents the relevant inoperative equipment. Items marked with an asterisk have dedicated failure procedures, which may have to be performed, at pilot's discretion:

- |                         |                           |
|-------------------------|---------------------------|
| - ADC 1 (*)             | - Left Landing/Taxi Light |
| - Cockpit FCSOV         | - Roll Trim               |
| - De-Ice System (*)     | - Stick Pusher (*)        |
| - DME 1                 | - VHF 2                   |
| - Engine 1 Anti-Ice (*) | - Windshield Heater 1 (*) |
| - Engine 1 Flowmeter    | - WX Radar                |
| - Flap System (*)       | - Yaw Trim                |

Figure 2 – AFM Section 4-08, Pages 6 and 7, DC BUS 1 OFF

(3) Revise the AFM by replacing the EMERGENCY BUS OFF procedure in AFM section 4-08, Abnormal Procedures, page 9, with Figure 3:

<b>EMERGENCY BUS OFF</b>	
ADS/AOA Knob.....	ON
Airspeed .....	250 KIAS MAXIMUM
Altitude.....	25000 ft MAXIMUM
<p>The list below presents the relevant inoperative equipment. Items marked with an asterisk have dedicated failure procedures, which may have to be performed, at pilot's discretion:</p>	
- AHRS 1 (*)	- LDG Indication/Warning
- Audio Panel 1 (*)	- Red Beacon
- Autopilot (*)	- Oxygen Transducer
- EFCU 1	- Pax Mask Deploy (Auto)
- Engines Fire Detection (*)	- PFD 1
- Flight Director 1	- Pitch Trim (Back-Up) (*)
- AFCS Control Unit	- PRSOV 1 & 2
- Fuel Booster Pumps	- Transponder 1
- Fuel Shutoff Valves	- Stick Pusher (*)
- Fuel Transfer Valve (*)	- Stall Warning
- GIA 1 (*)	- WOW (*)
- GPS 1/VOR 1/ILS 1	- Yaw Damper

Figure 3 – AFM Section 4-08, Page 9, EMERGENCY BUS OFF

### FAA AD Differences

Note: This AD differs from the MCAI and/or service information as follows: No differences.

### Other FAA AD Provisions

(g) The following provisions also apply to this AD:

(1) Alternative Methods of Compliance (AMOCs): The Manager, Standards Office, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Send information to Attn: Karl Schletzbaum, Aerospace Engineer, FAA, Small Airplane Directorate, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329-4146; fax: (816) 329-4090. Before using any approved AMOC on any airplane to which the AMOC applies, notify your appropriate principal inspector (PI) in the FAA Flight Standards District Office (FSDO), or lacking a PI, your local FSDO.

(2) Airworthy Product: For any requirement in this AD to obtain corrective actions from a manufacturer or other source, use these actions if they are FAA-approved. Corrective actions are considered FAA-approved if they are approved by the State of Design Authority (or their delegated agent). You are required to assure the product is airworthy before it is returned to service.

(3) Reporting Requirements: For any reporting requirement in this AD, under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 et.seq.), the Office of Management and Budget (OMB) has approved the information collection requirements and has assigned OMB Control Number 2120-0056.

**Related Information**

(h) Refer to MCAI ANAC, AD No.: 2009-10-01R1, dated October 16, 2009, for related information.

Issued in Kansas City, Missouri on November 2, 2009.

Kim Smith,

Manager, Small Airplane Directorate, Aircraft Certification Service.

[FR Doc. E9-26795 Filed 11-10-09; 8:45 am]

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